Tsunami

Tsunamis are usually the result of an earthquake on the ocean floor. The movement created by the earthquake generates enormous waves which can wipe out entire cities and villages. In July 1998 Papua New Guinea suffered great devastation from a tsunami that produced waves up to 10 metres high. The earthquake that began the tsunami measured 7 on the Richter scale and the waves took six minutes to reach land, at which time upwards of 3 000 people lost their lives, mostly from drowning. Although the Papua New Guinea tsunami was devastating, it was not a Pacific-wide tsunami, the last of which occurred in 1964.

The area that is most prone to tsunamis is Hilo (pronounced hee-low) located on the eastern coast of the island of Hawaii between two volcanoes, Mauna Kea and Mauna Loa. Hilo has a population of 45 000 people and is the second largest deepwater port in the island chain of Hawaii. It has been frequently subjected to tsunamis. In terms of property damage and loss of human life from tsunamis, Hilo surpasses all other areas in Hawaii, and therefore has a reputation as the tsunami capital of the Pacific. As many people live in coastal areas, it is very important to understand how tsunamis form.

'Tsunami', a Japanese word which translates as 'harbour wave', is now used internationally to refer to a series of waves travelling across the ocean. These waves have extremely long wavelengths, up to hundreds of kilometres between crests in the deep ocean. When these waves approach land, their speed decreases as they begin to 'feel' the bottom. This is when the height of the wave increases. Usually the water level drops just before a tsunami hits. The waves often devastate coastal areas, resulting in mass destruction and, in many instances, loss of life.

Often a tsunami is incorrectly referred to as a tidal wave. Tidal waves are simply the periodical movement of water associated with the rise and fall of the tides, which are produced by the gravitational pull of the sun and moon. Tsunamis have no connection with the weather or with the tides.

Oceanographers often refer to tsunamis as seismic sea waves, as they are usually the result of a sudden rise or fall of a section of the Earth's crust under, or near, the ocean. A seismic disturbance can disrupt the water, creating a rise or fall in the level of the ocean above. This rise or fall in sea level is the initial formation of a tsunami wave. Very often ships above an underwater earthquake will not even feel the beginning of the tsunami. The size of the waves produced is directly linked to the severity of the earthquake.

Tsunamis can also be created by volcanic activity and landslides occurring above or below the sea surface. The types of tsunamis produced in this manner usually have far less energy than those produced by submarine (under sea) earthquakes. The size and energy of these tsunamis dissipates quickly as they move away from the volcano or landslide so the damage they cause is not usually as bad as tsunamis produced by earthquakes.

Tsunamis are devastating events as they cause loss of life and destruction of buildings and houses near the coast. It is important to understand tsunamis and be aware of the danger that they pose to coastal areas.